



**First records of Risso's dolphin (*Grampus griseus*)
from the Gulf of California with detailed
notes on a mass stranding**

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Abstract. *Grampus griseus* has been reported in the northeastern Pacific (near the coast) from southern British Columbia, Canada, to Acapulco, México, and near 2 oceanic islands, Isla de Guadalupe, off Baja California, México, and Clipperton Island, west of Costa Rica. On the basis of 2 sightings from an aircraft and of observations in detail on a mass stranding, penetration into the Gulf of California is herein recorded.

Resumen. *Grampus griseus* se extiende en la región nordeste del Pacífico desde cerca de las costas meridionales de la Columbia Británica (Canadá) hasta Acapulco (México) y en las inmediaciones de 2 islas oceánicas, Guadalupe (frente a Baja California) y Clipperton (al oeste de Costa Rica). Se incluye información sobre la penetración de esta especie en el Golfo de California, al considerar 2 observaciones desde un avión y los datos detallados obtenidos al vararse y morir cinco individuos en las costas del Golfo.

INTRODUCTION

The wide-ranging, nearly cosmopolitan delphinid *Grampus griseus* (Cuvier), often called "Risso's dolphin" (Fig. 1), has been reliably reported in the northeastern Pacific Ocean: inshore, from southern British Columbia (Guiguet and Pike 1965) southward to Acapulco, México, and offshore, not only of the mainland coast, but also near oceanic islands, including Isla de Guadalupe, off the Mexican state of Baja California (Hubbs 1961:145), and from Clipperton Island, west of Costa Rica (Leatherwood et al. 1972:92). These records, and many others, from the northeastern Pacific, are being documented by Stephen Leatherwood and colleagues.

This paper presents observations that document the penetration of *Grampus griseus* into the Gulf of California, on the basis of 2 well-separated sightings from an airplane on a marine-mammal survey, and of detailed observations along the north-western shore of the Gulf, by Matilda Fisher and family, of a mass stranding of 5 individuals, all of which died overnight. Some plausible causes of such lethal strandings are discussed.

Because this species was not seen by 2 of us (Leatherwood and Hubbs), on numerous research trips around the Gulf, by ship, automobile, and airplane, we believe that Risso's dolphin is not common anywhere in the Gulf of California.

AERIAL OBSERVATIONS

During an aerial survey of marine mammals in the tropical eastern Pacific Ocean, National Marine Fisheries Service observers Eric G. Barham, William E. Evans, and James M. Coe encountered herds of *Grampus griseus* at 2 well-separated locations in the Gulf of California, México (Fig. 2). At 0958 h, 13 February 1974, they observed a herd estimated to contain 50 ± 10 individuals at $\approx 24^{\circ}52'N$, $108^{\circ}58'W$, in the



FIG. 1. *Grampus griseus*, 1 of several collected on northeastern shore of Florida and exhibited in Marineland of Florida.

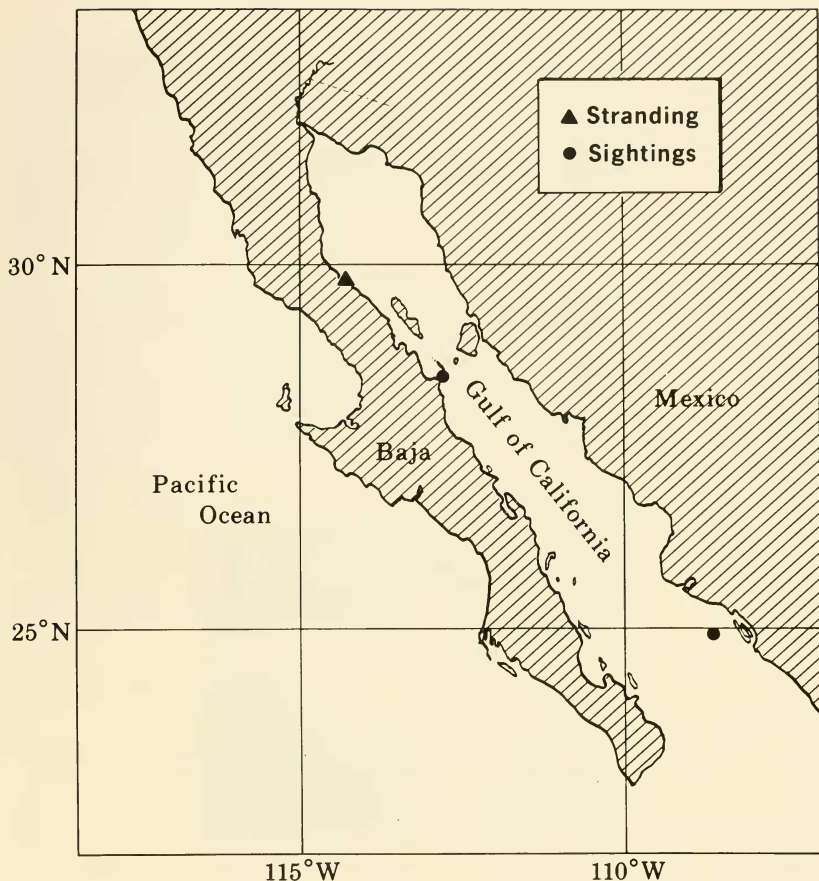


FIG. 2. Location of records for *Grampus griseus* in the Gulf of California.

southern and eastern part of the Gulf, some distance west of Isla Altamura, Sinaloa. At 1216 h on the same day they saw 2 more individuals of the species much farther north, at $\approx 28^{\circ}21'N$, $112^{\circ}30'W$, close to the northern and western shore of the Gulf, southwest of Isla San Lorenzo, and off the far-southern part of the State of Baja California (which occupies the northern half of the peninsula of the same name). Each of these locations is close to, if not partly within, one of the deep basins that occupy much of the southern two thirds of the Gulf (Shepard 1950, Rusnak et al. 1964). Because this delphinid seems to be largely an offshore species wherever it occurs, it may well be assumed that in the Gulf it occurs chiefly in the deeper areas, where the water is relatively clear.

The stranding here recounted, however, lies in the transitional area approaching the northern part of the Gulf, where the water is relatively shallow, and often rendered more or less turbid by the upwelling of deep deposits of varved sediment that have stemmed from past discharges of the sediment-rich Colorado River.

THE LETHAL MASS STRANDING

On 18 June 1973, the vacationing family of Ernest G. Fisher, of Brea, California, while camping on the northwestern shores of the Gulf of California, encountered the stranding of 5 cetaceans that were later identified, from their photographs (Fig. 3), as Risso's dolphins. The Fisher camp was at Punta Bufeo, "about 5 miles" [≈ 8 km] north of the establishment of "Papa Fernández," on Bahía San Luis Gonzaga, in the state of Baja California (Fig. 2). At ≈ 1700 h they watched several large dolphins seemingly chasing a large school of fish, thought to be mullet, and apparently taking some at the surface, in the presence of numerous gulls. The dolphins were relatively close to the beach, usually within 100 m. At times they approached the shoreline, where a broad shallow shelf was being created by the receding tide (Fig. 3a).

At ≈ 1730 h the dolphins ceased their apparent feeding activity and headed toward the beach. One of them (in the foreground in Fig. 3b) suddenly outstripped the other 4 and continued alone up the gradually sloping beach, at first separately, until it was in no more than "one foot" [≈ 0.3 m] of water (not enough to cover it). Here, for ≈ 10 minutes, it began rooting in the sand. By then breathing seemed to have become labored, and the animal appeared to be unable to maintain an upright position. Not long after this individual had moved shoreward, the 4 other dolphins slowly proceeded into shallow water, where they remained with the first that stranded and kept nudging at it; at times they gave the impression of trying to force it back toward deeper water (Fig. 3c). For some time, the 4 remained near the obviously incapacitated individual, even when members of the observing party entered the rapidly shoaling water and touched them. To the observers, the breathing of the other animals seemed to remain more normal than that of the first to strand, and their actions seemed to be more coordinated. They appeared to avoid complete stranding, even when they ventured into water $<$ "one foot" [≈ 0.3 m] deep. They extricated themselves from the beach and negotiated the tidal change. The observers got the impression that the 4 may have merely followed the "leader" to the point of death.

By ≈ 1800 h the dolphin that first approached the shore had definitely stranded. As the tide continued to ebb, during the large tidal movements characteristic of the upper Gulf, the 4 still-mobile animals gradually moved farther from the beach, but continued to stay close inshore. By midnight, the first grampus that stranded had died, and was being carried up the beach by the incoming tide. The 4 pod-mates were still in attendance, remaining within "about 100 feet" [≈ 30 m], swimming back and forth along the beach. At ≈ 0200 h the following morning (19 June), the situation had not changed, except that the first animal to strand and die was being tossed about in the surfline of the still-incoming tide, while the other 4 still stayed within "100 feet" [≈ 30 m], seemingly patrolling.

At dawn, ≈ 0530 h, the dead animal was high and dry (Fig. 3d). Its length was estimated at the site to be "12-13 feet" [nearly 4 m] and its weight to be "600 lbs" [≈ 270 kg]. No major recent external injuries were apparent, though the body was covered by numerous healed scars (as is characteristic of the species). Subsequent examination of the photographs showed that it was a female. At 0600 hr the other 4 pod-mates were found to be stranded about "300 ft" [≈ 100 m] southward, but were still alive. By 0800 h they too had perished. All 4 were estimated to be of about the same size, about "12 ft" [4 m] and to weigh "500 to 600 lbs" [≈ 227 -272 kg]. They also were heavily scarred, but none showed any obvious recent external injury. Examination of the photographs (Fig. 3e) showed that at least 3 were females: at least 4 of the 5 animals were of that sex.

Although all of the dolphins were of similar size, they varied considerably in coloration. One was nearly white all over; the others ranged from dark gray to light gray (another characteristic of the species), with white areas of varying size on the belly. All 5 carcasses were towed offshore and released in the Gulf.

These detailed observations of the stranding of a pod of *Grampus griseus* apparently constitute the first known sighting of the genus and species in the Gulf of Cali-

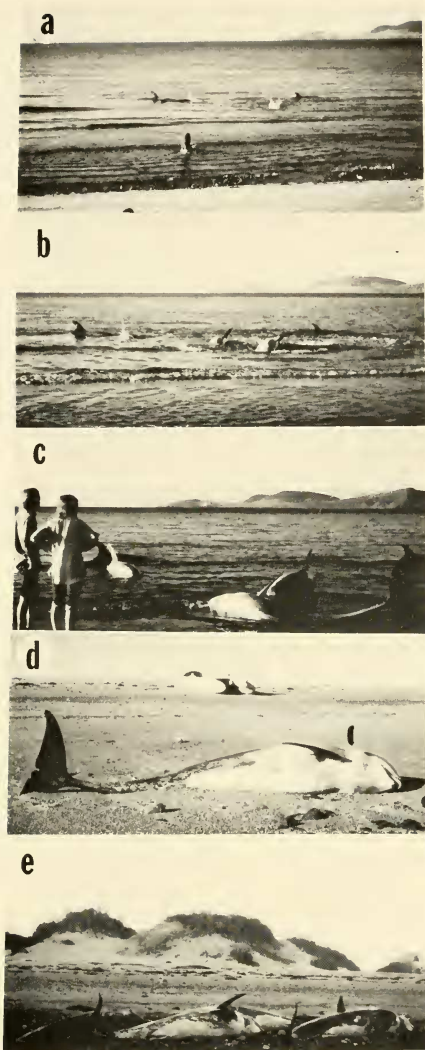


FIG. 3. Sequential views of the reported stranding of *Grampus griseus*. a. The 5 *Grampus* dolphins are in the shallows where they had been feeding on mullet (≈ 1700 h, 18 June 1973). b. The animals approaching the shallows (≈ 1730 h). c. The first animal in the process of stranding (≈ 1740 h). The other 4 continue to remain close by, despite the rapidly ebbing tide, at times nudging the "distressed" one. d. The following morning (≈ 0530 h, 19 June 1973) the first one to strand is now high and dry. e. The remaining 4 stranded animals alive ≈ 10 m farther down the beach (≈ 0600 h, 19 June 1973).

fornia. The observed details of this stranding follow in various respects the sequences described for some other almost continuously watched cetacean strandings, including one involving ≈ 20 pilot whales (*Globicephala* sp.) recounted by Hubbs (in Norris 1966:605). In a rather major aspect, however, this *Grampus* mass stranding seems to

differ, in that just before starting to strand, the 5 individuals appeared to be feeding actively, whereas it has generally been thought that stranded cetaceans have little or no recently ingested food in their stomachs. One noted exception to this generalization involved an adult female pilot whale found on 20 August 1952 freshly stranded at Encinitas, San Diego County, California, with flesh so flaccid that a depression formed by slight pressure on the surface remained, although the stomach and even the throat were strangely crammed with freshly ingested giant kelp, *Macrocystis*, calling to mind the propensity of sick dogs to devour grass.

The behavior of a single member of the grampus group here reported suddenly changed, its respiration seemed labored and its equilibrium appeared unstable. For some time, the 4 others appeared to function normally, while staying close to the one first stranded.

Why cetaceans, such as those comprising this pod of *Grampus*, at times rather suddenly strand and then die, as individuals or in groups of varying size, for no readily perceptible reason, has long been a topic of discussion, probably largely because thorough postmortem studies are often lacking. Some postmortem examinations have revealed that at least some strandings result from sickness or injury. Alternatively, some mass strandings seem to have involved apparently healthy and uninjured animals. Those stranded, individually or in groups, frequently seem to make little or no effort to head back seaward, often even resisting efforts of sympathetic persons to lead them to safety.

The observations recounted here, although contributing some data on events in a cetacean stranding, seem to have no critical bearing on the cause or causes of the lethal phenomenon. Theories regarding causes of cetacean strandings have been many and diverse. A recent summary (Leatherwood et al. 1976) states:

Strandings of lone individuals usually involve an animal which is sick or injured. Mass strandings, involving from several to several hundred individuals, appear to be far more complex and may result from herd-wide disease conditions, from fear reactions, or from failure of the echolocation system due to physiological problems or environmental conditions which combine to reduce its effectiveness, to mention only a few.

Reysenbach de Haan (1957), Fraser (in Norris 1966:602), Caldwell and Caldwell (1971), and Ridgway and Dailey (1972), among others, have discussed the probable role of parasitism in strandings of cetaceans. James G. Mead (*personal communication*) found that all members of a herd of short-finned pilot whales (*Globicephala macro-rhynchus*) that stranded in North Carolina in 1974 were heavily infested by parasites in the ear canals, implicating possible mass infection in whole-herd strandings. Incidence of such infestation of the middle ear was found to be relatively low in samples of presumably healthy spotted and spinner dolphins (*Stenella* spp.) incidentally captured in tuna seines, but changes in incidence with age suggest that the parasite or parasites involved may be a factor in natural mortality (Dailey and Perrin 1973). It is hoped that such evidence of the association of parasitism with stranding will be further tested, along with additional determination of such parasitism in nonstranded cetaceans.

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